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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/633,002 | 08/04/2000 | Keiji Ishibashi | | 2248 |

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| EXAMINER | |
|---|---|
| MARKHAM, WESLEY D | |
| **ART UNIT** | **PAPER NUMBER** |
| 1762 | 8 |

DATE MAILED: 04/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/633,002 | ISHIBASHI, KEIJI | |
| | Examiner | Art Unit | |
| | Wesley D Markham | 1762 | |

*-- Th MAILING DATE of this communication appears on th cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *05 November 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *11-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

Acknowledgement is made of applicant's amendment B, filed as paper #7 on November 5, 2001, in which non-elected Claims 17 – 20 were canceled. Claims 11 – 16 are currently pending in U.S. Application Serial No. 09/633,002, and an Office Action on the merits follows.

### *Election/Restrictions*

1. In the cancellation of non-elected Claims 17 – 20, drawn to a CVD apparatus, the examiner acknowledges the applicant's election of Group I, Claims 11 – 16, drawn to a method of removing a deposited film inside a chamber.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 11 – 12 and 15 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama (USPN 5,149,375) in view of Niino et al. (USPN 5,637,153) for the reasons set forth in paragraphs 7 – 9 of the previous Office Action.

4. Claims 13 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama (USPN 5,149,375) in view of Niino et al. (USPN 5,637,153), and in further view of Iwasaki et al. (JP 03-226578 A) for the reasons set forth in paragraphs 10 – 11 of the previous Office Action.

***Response to Arguments***

5. Applicant's arguments filed on November 5, 2001 have been fully considered but they are not persuasive.

6. First, the applicant argues that Niino et al. teach that the chamber to be treated must be heated to a temperature in excess of 400° C to attain a practical etching rate, and thus the method of Niino et al. is available only for chambers which can be heated to such a high temperature. In response, the applicant's claims do not exclude chambers that are heated to a temperature in excess of 400° C. Further, Niino et al. has been used in a 35 U.S.C. 103(a) rejection, and therefore in response to the applicant's above argument against Niino et al. individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In addition, please note that it is the examiner's position that, while Niino et al. teach activating the cleaning gas (e.g., $ClF_3$) by utilizing a hot reaction chamber or hot atmosphere inside the reaction chamber, and Matsuyama teaches activating various process gases by utilizing a hot-filament inside the reaction

chamber, one of ordinary skill in the semiconductor CVD / etching art would have recognized that activating a process gas by utilizing a hot reaction chamber (as taught by Niino et al.) and activating a process gas by utilizing a hot-filament inside the reaction chamber (as taught by Matsuyama) are equivalent methods of heat-activating process gases.

7. Second, the applicant states that platinum will not remain stable in a cleaning gas atmosphere such as $CF_4$ or $ClF_3$ at high temperatures. In response, this statement is contradicted by the applicant's disclosure. For example, please note page 12, lines 7 – 9, of the applicant's specification, which states that when using $ClF_3$ as a cleaning gas and heating a processing chamber or a member to decompose the gas, an in-situ cleaning is available since the hot element (which in the applicant's specification and claims comprises platinum) is stable against the $ClF_3$.

8. Third, the applicant argues that the fact that platinum is stable in the presence of a corrosive cleaning gas, even at high temperatures, was not known to a person of ordinary skill in the art. In response, the examiner notes that Matsuyama teaches that the reason platinum is chosen as the material for the hot-filament is in view of its heat resistance and reaction resistance (Col.9, lines 5 – 16). Therefore, one of ordinary skill in the art would have had the reasonable expectation that the platinum filament of Matsuyama would be resistant to cleaning gases. In further support of this point, please note Iwasaki et al. who teach that platinum is resistant to corrosive fluorine-based cleaning gases. Specifically, Iwasaki et al. teach that, "Even if the inside of the device is cleaned with a fluorine-based gaseous etchant, the internal

members are not corroded, and the device is used over a long period." (Constitution).

9. Fourth, the applicant argues that the method of Niino et al. cannot be practiced with the apparatus of Matsuyama because Matsuyama heats a heating element and Niino et al. heat the chamber itself. In response and as set forth in paragraph 6 above, one of ordinary skill in the semiconductor CVD / etching art would have recognized that activating a process gas by utilizing a hot reaction chamber (as taught by Niino et al.) and activating a process gas by utilizing a hot-filament inside the reaction chamber (as taught by Matsuyama) are equivalent methods of heat-activating process gases.

10. Fifth, the applicant argues that it is not explicit or implied in Niino et al. that the deposited film is converted to a gaseous substance which can be removed. The examiner disagrees, as Niino et al. teach that, during the dry cleaning process, the exhaustion gas containing the reaction products generated during the dry cleaning process is discarded via the exhaustion tube (Col.21, lines 34 – 42). Thus, at the very least, it is implicit in Niino et al. that the deposited film is converted to a gaseous substance during the cleaning process. If the deposited film was not converted to a gaseous substance, it could not make up a portion of the exhaustion gas as taught by Niino et al.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

15. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
Art Unit 1762

WDM
April 1, 2002

SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700